

# DISEASES

OF THE

# CHEST

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## Editorial Comment

### CHRISTMAS SEALS



*Help to Protect Your  
 Home from Tuberculosis*

that portion of the public which visited my office during the month."

We are all agreed, and this is particularly brought to our attention by the recent Gallup Poll, that there is still a great need for the education of the public concerning tuberculosis. The physician can well afford to give up a little of his time and knowledge during the season of the Christmas Seal campaign to tell his patients something about the work being done by the National, State, and Local Tuberculosis Societies.

If nothing more, he can point out that tuberculosis is still the greatest killer of youth, that more people in the teen ages die from tuberculosis than from any other disease. This is the kind of message which the public can easily grasp and understand. It could be brought home to them by every doctor during this Christmas Seal Campaign.

Have some seals handy and also have some literature available. Your local tuberculosis society will supply you with both, and you will get a great deal of satisfaction from having helped in this worthy cause. The executive offices of the American College of Chest Physicians would like to know of your results both in the amount of monies collected and in the reaction of your patients and friends to this plan. *Try it this year and let us hear from you.*

C. M. H.

**EVERY PHYSICIAN'S OFFICE A SEAL SALE BOOTH**

In the July issue of this journal we carried an editorial by Dr. Frank Walton Burge, the Chairman of the Editorial Board of our journal wherein he gave the results of an experiment carried on in his office during the last Christmas Seal campaign. Dr. Burge stated in his report: "I am convinced that the \$60.00 collected at my office during the seal sale campaign was less important than the opportunity afforded to me for educating

**CASE FINDING** Eighty per cent of tuberculosis cases are moderately or far advanced when they finally receive modern or effective treatment. This is the fault of us doctors, on two counts.

First, we fool away precious time, looking wise with a stethoscope, when an early case does come to us with the typical story of fatigue and weight loss, instead of depending upon the x-ray and the sputum examination.

Second, we oppose case finding programs. I will grant you that the opposition has often been based on the manner in which the survey was conducted, and on who was surveyed. But that has been our own fault. We have not taken an interest in guiding the survey properly. For example, a school teacher with positive sputum may infect fifty children a year for thirty years (fifteen hundred children), whereas an infected mother is a special menace to her own brood (averaging three). So, we can afford to spend five hundred times more time and money to find the infected school teacher. A sputum positive school janitor or school cook is a still greater menace. All school employees should be tuberculin tested and the positive reactors x-rayed. This procedure should be repeated more frequently where the tuberculosis incidence is high. For example, teachers, janitors, and other employees, who are colored, should be examined four times as frequently as the white employees, since the tuberculosis incidence and death rate due to tuberculosis is four times as high among the colored as among the whites.

If it were not so criminal, one would laugh at the procedure now going on of tuberculin testing the children from the school room of a positive sputum teacher, taking out the infected ones, and sending in a new batch to take their places and be infected in turn, with no attempt made to examine and eliminate the infectious teacher.

Start surveying in the most infected district, and you will get the greatest return.

Survey your heavy laborers and you will find six times as many cases as you will if you survey clerks.

We physicians in organized medicine should be begging for surveys instead of opposing

them. Every case found means less danger to our own families, less years of invalidism and death for the public, and more work and money for the private physician, private x-ray specialist and chest specialist. Survey by the paper film method is adequate. The passing in review before the fluoroscope is far better than the physical examination if suspicious cases can be followed up with an x-ray picture.

F. W. B.

## X-RAY IN TUBERCULOSIS

For the earliest, the most accurate, the surest diagnosis of clinical tuberculosis; the x-ray examination is pre-iminent. In fact, it can be said with little fear of any rational contradiction, that it is probably the one and only method of examination that detects the really early tuberculous infiltrate in the lungs. It has been very definitely shown that these beginning tuberculous lesions in the lungs can be seen on a good roentgen film, a considerable length of time before symptoms appear, in many instances 1 to 3 years before. This very interesting fact has evolved from the follow-up program in case finding surveys. It is now well recognized that to wait until the usual and cardinal symptoms appear before suspecting or making the diagnosis of pulmonary tuberculosis, is to wait until the disease has advanced apace. This is why about 75 or 80 per cent of patients on admission to the sanatorium are in the advanced stages. As with symptoms, so it is with the physical signs—they usually appear late, and frequently not at all. It is nice to take pride in one's skill and astuteness in performing a chest examination; but to depend upon it in making your diagnosis of pulmonary tuberculosis can only be disastrous. It has been estimated by some observers that physical signs are obtained in about only 20 to 25 per cent of proved positive cases of tuberculosis; and this in the experience of those who may justly be called experts.

The Mantoux, or intra-cutaneous tuberculin test, indicates only the presence of infection—and this it does with the nicety of perfection and at the early time when it can be told by it and it alone—but it does not indicate whether or not clinical disease exists. This latter is revealed by the x-ray

film. The tuberculin tests aid essentially in determining those individuals on whom films should be made. It thereby serves tremendously in an economic way and also in lessening the work load. The importance of this in large case finding surveys is obvious.

Since the advent of Wilhelm Konrad Roentgen's contribution to medical science in 1895, the x-ray examination has come a long way. The film roll for mass production, the planeograph and the high speed camera-fluoroscopic attachment, are signposts of its future development. With improved equipment and technique there is no excuse today for poor x-ray films. It is wise to emphasize that only satisfactory films should be read, for poor ones are at times worse than none at all, while an excellent film is the best means at our command for the early and accurate diagnosis of pulmonary tuberculosis. Doctors, x-ray your patients—the sick, the contacts, the well!

C. H. H.

#### TUBERCULOSIS SECTIONS IN ORGANIZED MEDICINE

Tuberculosis Sections of County Medical Societies are practical if handled in a practical way. In Philadelphia, the newly organized Section on Tuberculosis of The Philadelphia County Medical Society has held two monthly meetings this Fall. The object of the Section is the same as that of this Journal—to bring the newest thought concerning tuberculosis diagnosis and treatment to the general practitioner and the specialist in other lines of medicine. The first meeting was attended by eighty-six general practitioners, the second by ninety-four. Round Table questions on lung diseases by the general practitioners were answered by a group of specialists on lungs, the group being changed at each meeting.

The doctors are seated at small tables. Beer is served throughout the meeting. After the first meeting, we served baked ham and roast turkey. Following the second meeting we had an oyster and clam bar, with all the freshly opened oysters and clams that could be eaten, followed by hot roast ribs of beef sandwiches, with plenty of gravy.

We start the meeting at 9:30 P. M. so the

men in general practice can arrive in time. Questions are answered by 11 P. M. and the doctors eat, drink and socialize until 1 A. M.

We promised our "questioners," in advance that we would not bore them with lengthy or technical dissertations.

At every meeting we "work in" a few words about "sputum test everyone who coughs up sputum" and "have a single film of the lungs on record of each one of your patients."

The questions asked have been practical and the answers interesting.

If the meetings continue to grow in attendance of general practitioners, we will incorporate the Tuberculosis Section of the County Medical Society into the Pennsylvania Plan. The above plan may be of interest to other Tuberculosis Committees.

F. W. B.

#### LUNG SPECIALISTS ARE TO BE CONGRATULATED

Doctor Francis G. Blake, a celebrated internist of New Haven, Connecticut, in an article published in the Journal of the American Medical Association, concludes as follows:

"Artificial pneumothorax would appear to be of value for the relief of pleural pain in selected early cases of lobar pneumonia. It has not been demonstrated that it possesses any curative value in this disease." (J.A.M.A. Vol. III, Aug. 13, 1938).

It requires a big man to so reverse his attitude and Doctor Blake is conceded to be that. A lesser character would have just kept quiet.

In view of the fact that artificial pneumothorax in pneumonia has been noted to increase the incidence of empyema by as much as three hundred per cent, it is to be hoped that this negative opinion by the leading early exponent of this theory, will write finis to the treatment of pneumonia by a method which offers so little promise.

The lung specialists of the country should and do know lungs, and so, naturally, did not "take" in any great number, to the collapsing of solid lung tissue, such as occurs in lobar pneumonia.

F. W. B.



## Chronic Bronchitis

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CHRONIC bronchitis is one of the most frequently made diagnoses. It is made too easily after a hasty office conference and made on the clinical history. Too often this is as far as the diagnostic procedure goes and the patient continues under treatment year after year, especially in the winter months. His symptoms are prescribed for and no effort is made to determine the true nature of his difficulty. The term is defined in *The American Medical Dictionary* by W. A. Newman Dorland, A.M., M.D.: "A long-continued form, often with a more or less marked tendency to recurrence after stages of quiescence. It is due to repeated attacks of acute bronchitis or to chronic general diseases; characterized by attacks of coughing, by expectoration, either scanty or profuse, and secondary changes in the lungs."

Years ago such a chronic condition was spoken of as catarrh and a change of climate was advised. The acceptance of such a diagnosis without a systematic study of the case may prove embarrassing to the doctor when the patient later is diagnosed as a case of chronic fibrous tuberculosis or a younger member of the family breaks down with an acute pulmonary tuberculous infection that obviously came from grandma, who for years just had a case of bronchitis.

Many men have questioned the advisability of ever making a diagnosis of chronic bronchitis, but have insisted that such a diagnosis was but a descriptive term used to cover a series of symptoms. While chronic bronchitis is not strictly a specific entity, it is a condition frequently found and one is justified in using the term to describe this condition, but only after a thorough study is made to exclude such diseases as tuberculosis or such pathology as bronchiectasis.

The causes of chronic bronchial irritation are many. It may begin with acute diseases such as measles, whooping cough, influenza, pneumonia, typhoid, scarlet fever, or malaria. It may be present as a secondary manifestation in tuberculosis, pneumoconiosis, silicosis, bronchiectasis, lues, infected tonsils,

sinus infections, or bad teeth. Also, in this class is the passive congestion due to a decompensated heart that provokes a chronic cough productive of a blood tinged mucus.

Deformities and new growths, such as deviation of the septum, adenoids, enlarged turbinates, foreign bodies in the nasal tract or bronchial tubes, tumor growths in the nasal passages, mediastinal tumors, aortitis, aortic aneurysm, or enlargement of tracheal and bronchial glands, especially in children, may be factors.

Allergic individuals may suffer from bronchitis as a result of asthma, hayfever or food intoxications with edema of mucous membrane. This condition is more prevalent in the poorer classes and those exposed to the weather. In industry where chemical fumes, dusts, and silica particles are prevalent, irritation of the bronchial mucosa may occur. Musicians that use wind instruments are often victims. So we see that there are many factors that may produce bronchial irritations.

If the etiological agent can be found and removed, better health will result. Even if pathological changes have occurred, such as in bronchiectasis, the patient can be made more comfortable and if the symptoms are due to an underlying tuberculosis our study will not only profit the individual, but will help in the public control of this disease. The development of this condition is usually over a period of years. It is frequently found in middle age and rarely in the young. At first the reaction is that of an acute inflammation. Later on, there is hypertrophy of the mucosa or, in some places, atrophy. Emphysema may develop later with an over distention of alveoli, loss of elasticity and finally bronchiectasis. There exists a venous hyperaemia with an edema of the mucous membrane. There is some muco-purulent sputum.

In making an investigation of such a case an orderly procedure should be followed beginning with a careful history with emphasis on past diseases and occupational hazards. Questions regarding the possibility of aspira-

tion of a foreign body are important in some cases. There should be an examination of the nose and throat. A roentgenogram of the sinuses should be done. Transillumination is not enough. Often chronic bronchial irritation is due to a posterior drip from the sinuses. Culture of the nasopharynx may reveal bacteria in the area of the adenoid tissue that are not normal inhabitants of the throat and can cause a chronic type of nasopharyngitis and bronchitis. Of course, acid fast bacilli should be looked for in the sputum in every case.

The examination of the chest may be confusing and should be followed by a roentgenogram to evaluate the findings. A film should be made after the instillation of iodized oil to rule out the possibility of a bronchiectasis or other abnormalities of the bronchial tree. In making the roentgen ray study there may be no noticeable changes in the film. On the other hand, the film and fluoroscope may help a lot in the study of the case. The contours, position and the movements of the diaphragm may be affected. There may be changes in the markings of the lung fields. The angulation of the ribs and the width of the intercostal spaces should be noted as often these are altered. In the normal chest the diaphragm domes are smooth and the angles clear. The right dome is higher than the left. The highest point of the diaphragm in quiet respiration varies in patients. Considerable excursion occurs on respiration under the fluoroscope in the normal. This may be altered if pathology is present. The dome may be flattened and the angles obliterated. Peaking of the diaphragm due to adhesions is a common finding. Fibrotic changes

nearly always occur in the parenchyma. Thickening of the pleura may be seen. There may be a slight increase in linear stria. The markings are due to an interstitial fibrosis. The lung markings may not be in proportion to the findings on auscultation.

On inspection of the patient the chest may prove to be a barrel shaped type, rather fixed and with no lateral expansion. The apex beat is normally not seen due to the emphysema. However, a barrel chest does not always mean emphysema but may mean bony changes in the thorax due to advancing years. On palpation vocal fremitus is either normal or decreased. There may be areas of fremitus due to coarse rales. The percussion note either shows no change or is hyper-resonant. If secretions are profuse, there may be dullness at the base. Breath sounds normally are decreased with a prolonged inspiratory phase. Mixed rales may be present. Voice sounds are normal or diminished.

In some cases a bronchoscopic examination may be necessary, often the bronchi may be plugged with mucous.

If there is any suggestion of allergy, the allergist should be called in consultation.

After such a study is made of the case, the type of treatment would depend on the cause. Many of the cases can be materially relieved of their distressing symptoms and early cases can be saved the results of the pathological changes that occur if the process is allowed to continue; and, if perchance the so-called bronchitis is due to a specific disease such as tuberculosis, the patient's life may be saved and the doctor will have the satisfaction of a piece of work well done.

### ANTHRACO-SILICOSIS

Statistics from White Haven Sanatorium, Pennsylvania, reveal that tuberculosis of the intestine was found in only 19% of the cases where anthracosis and pulmonary tuberculosis were associated as contrasted to 51% where the pulmonary tuberculosis was uncomplicated by silicosis. This may be due to the extreme pulmonary fibrosis present in these cases preventing the spread of the tubercle bacilli. In early or moderately advanced cases of silicosis the rate of intestinal involvement is the same as in the cases which do not have silicosis. Charr, R. and Cohen, A.C., *Am. Jour. Med. Science*, 1938, 196.—*N. T.A. Service*.

## The Fate of the Sanatorium Patient

A study of patients discharged from the Iowa State Sanatorium during the years 1937 and 1938.

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RESULTS of treatment in pulmonary tuberculosis are all too frequently interpreted in the light of some specific form of therapy. To survey the outcome of the sanatorium regimen, including the application of modern methods of collapse therapy, is the object of this presentation. It should furnish a baseline—the “normal experience,” if you will—in phthisiotherapy for a type of patient drawn from an almost strictly agricultural area.

This report is a retrospective view of the sanatorium experience of patients discharged from the State Sanatorium at Oakdale, Iowa, in the two year period ending December 31, 1938. Other studies have shown the results of treatment in a group admitted within a certain time period. From a slightly different approach—that of a group discharged in a given period of time—the following data have been derived.

During the two year period from January 1, 1937, to December 31, 1938, 447 patients were discharged from the State Sanatorium. Of these 191 were male and 256 were female, ranging in age from 16 years to 78 years. The age tabulation is as follows:

TABLE I

Under 20	47
21-30	157
31-40	111
41-50	61
51-60	44
61-70	22
Over 70	5
Total	447

In common with the experience of other observers, the highest incidence is found in the group from 20 to 40 years, yet the following two decades yielded 105 or 23.4 per cent of the total.

TABLE II

*Classification on Admission*

Far advanced	255
Moderately advanced	82
Minimal	41
	378
Clinically non-tuberculous	69
Total	447

The advanced classifications represent 89 per cent of the actively tuberculous group, exclusive of the 69 non-tuberculous patients who comprise 15.5 per cent of the entire series.

On discharge, the following results were obtained:

TABLE III

*Classification on Discharge*

Arrested	106
Apparently arrested	9
Improved	101
Unimproved	57
Dead	105
	378
Clinically non-tuberculous	69
Total	447

It can be seen that nearly as many died as reached the arrested stage. A relatively large group were classified as “Improved” while a little more than half that number were “Unimproved”. 116 patients left with the approval of the medical staff; 152 against advice; and 5 were discharged for disciplinary reasons.

Patients in the arrested and apparently arrested classifications were those discharged



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with the approval of the medical staff<sup>1</sup>. It is obvious that the patients discharged on their own responsibility were in the improved and unimproved groupings, and the small number of disciplinary problems was here included<sup>2</sup>. It will be noted that no patients are classified as "Quiescent". This has seemed to us a somewhat superfluous division which is distinguishable only with difficulty from "Improved" on the one hand and "Apparently Arrested" on the other. The application of rigid standards in the discharge of these patients may have resulted in a less favorable statistical tabulation. It is, however, our chief purpose to determine how great a number arrived at the most favorable classification of arrest and apparent cure. The others must all be roughly grouped together. With them, therapy has not been successful.

The following table demonstrates the results of treatment in each of the admission classifications:

TABLE IV

*Discharged groups on basis of admission classification*

	Far Adv.	Mod. Adv.	Min.	Total
Arrested	47	34	25	106
Apparently arrested	4	4	1	9
Improved	59	31	11	101
Unimproved	44	9	4	57
Died	101	4	0	105
Total	255	82	41	378
Total discharged as clinically non-tuberculous				69
Total number of patients discharged				447

Here it will be noted that the rating of arrested disease was attained by 47 or 18 per cent of the far advanced group, 34 or 41 per cent of the moderately advanced group, and

1. In one instance where it was felt that further sanatorium treatment would be of no benefit to the patient, he was released as improved, with the advice of the medical staff.
2. It is the policy of the medical board to approve discharge only when certain criteria are met by the patient: sputum conversion to negative for six months; a sizeable activity or exercise schedule, and stationary or retrogressive x-ray findings, in accordance with the standards established by the National Tuberculosis Association.

25 or 60 per cent of the minimal group. Conversely, at the unfavorable side of the scale, viz., deaths, 101 or 40 per cent of the far advanced, and 4 or 5 per cent of the moderately advanced group so terminated. In the minimal classification, none died. These results are comparable with reports from other surveys.

How long must a patient remain in the sanatorium? To this question, various estimates have been made by referring physicians. The accompanying tabulation reproduces our recent experience in this phase:

TABLE V

*Duration of Sanatorium Residence on basis of admission classification*

Stage	Far Adv.	Mod. Adv.	Min.	Total
0-1 mo.	29	6	2	37
1-3 mos.	34	8	3	45
3-6 mos.	30	8	6	44
6-12 mos.	48	20	14	82
1-2 yrs.	55	14	12	81
2-3 yrs.	19	12	1	32
3-4 yrs.	16	3	1	20
4-5 yrs.	9	5	0	14
5-7 yrs.	10	1	1	12
7-10 yrs.	4	4	1	9
Over 10 yrs.	1	1	0	2
Total	255	82	41	378
Total non-clinically tuberculous				69
Total				447

Much, of course, depends upon the status of the disease when the patient is first seen at the sanatorium. Thus it is evident that the more advanced the disease, the longer will be the treatment. About half the minimal cases may be released within a year, while in the far advanced group, the residence is usually extended to more than two years.

TABLE VI

*Length of sanatorium residence according to end result of treatment*

Length of Residence	App. Arr.	Imp.	Un-imp.	Died	Total
0-1 mo.	0	1	25	11	37
1-3 mos.	1	13	9	22	45
3-6 mos.	5	19	7	13	44
6-12 mos.	23	26	8	25	82
12-18 mos.	22	12	3	10	47
18-24 mos.	15	8	1	10	34
2-2½ yrs.	11	3	3	3	20

2½-3 yrs.	8	1	0	3	12
3-4 yrs.	6	10	1	3	20
4-5 yrs.	7	5	0	2	14
5-7 yrs.	9	2	0	1	12
7-10 yrs.	6	1	0	2	9
Over 10 yrs.	2	0	0	0	2

Totals	115	101	57	105	378
Total non-clinically tuberculous					69

Total number discharged	447
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If we seek to determine the duration of treatment from the standpoint of end-results, we find that it requires from 6 months to 2½ years for a patient to be classified as arrested. This, taken with the foregoing tabulation, demonstrates again that the less advanced cases will reach a status of arrest earlier than the far advanced, and it accounts for the "spread" of time in this classification.

In the total series, 105 deaths occurred, representing 23.4 per cent of the entire discharged group.

TABLE VII

*The age distribution was as follows:*

Under 20	6
21-30	24
31-40	28
41-50	21
51-60	13
61-70	9
Over 70	4

105

It is significant to observe, not that the deaths were concentrated numerically in the 3rd, 4th and 5th decades, those age groups which contributed the largest number of patients, as shown in Table I, but the ratio of these deaths to the number of patients in each group. Thus the 24 deaths in the 3rd decade represent 15.3 per cent of all patients discharged in that age group; the 28 in the following decade constitute 25.2 per cent of patients of that decade, while the 21 deaths in the 5th decade account for 34.4 per cent of end-results in that age group.

Referring once more to Table VI, it will be noted that 46 or 43.8 per cent of the deaths

occurred within six months of residence; that another 25 or 23.8 per cent died in the following six months, totaling 67.6 per cent in one year—two-thirds of all the deaths.

### Comment

Certain findings are presented in the foregoing tables which are worthy of elaboration and further consideration.

I. *Incidence according to age and sex:* This series reveals a definite preponderance of females over males. It is questionable whether this reflects the actual incidence of the disease, or whether the detection of existing disease is made somewhat easier by the more frequent medical contacts of women than of men. Further, it may be advanced that men may defer entering a sanatorium because their position as "breadwinner" prevents their giving up gainful occupation for invalidism.

The age tabulation was of interest in demonstrating the relatively small number of patients under twenty<sup>3</sup>. And while the expected incidence occurred in the third and fourth decades, 105 or 23.4 per cent of all patients were derived from the 5th and 6th decades. This suggests an increasing incidence of tuberculosis in the higher age groups.

If such an interpretation is afforded by the tabulation, other questions at once arise, viz., the effect of age on the type of disease and on the outcome of treatment. It is common observation that many patients in the older age groups do not suffer appreciably from their disease, and that the chief reason for placing them in sanatoria is for isolation rather than treatment. What type of disease occurs in older people? What is its response to the rest regimen? What are the possibilities for active therapy in such patients? We have observed a variety of types of tuberculous disease in such patients, from the nodular infiltrating to the exudative and cavitating varieties. The small group in this series could not be useful for generalization, and, therefore, has not been classified in this respect. In the cavitating types, however, another problem is encountered: What forms of treatment are available? The likelihood of long-standing disease in such patients at once makes an effective pneumothorax problematical—although there will be a number

3. No patients are admitted under 16 years of age.



of isolated instances to be recalled in any series. The more drastic forms of collapse are attempted only in carefully selected cases, with the thought ever in mind of weighing a greater chance of fatality from the operative procedure against the possibility of many years of sputum-positive sanatorium residence.

Will the greater number of patients in the higher age groups affect the statistics of results of treatment? From the foregoing assumptions, it is concluded that (1) operative mortalities will be more numerous; (2) the likelihood of sputum conversion is rendered more remote in this group; (3) longer sanatorium care will be necessitated for those undergoing a modified rest regimen; (4) and deaths from non-tuberculous as well as tuberculous causes will be more frequent.

Referring once more to Table VII, it will be noted that the mortality rate in the 3rd decade is 15.3 per cent, while that in the 5th decade is 34.4 per cent.

**II. Duration of sanatorium care:** Treatment at a sanatorium, involving not only the introduction of effective measures of control of the disease and a period of graduated exercise by which the patient's response to activity is evaluated, is necessarily an extended process. The tabulations reveal that the majority of cases fall in the 6 to 24 months groups, and this will be taken as the standard estimate of the duration of sanatorium treatment. It will be noted that those remaining for longer periods are derived largely from the far advanced group, while those who are kept under treatment for a shorter time are from the minimal group. Similarly, it is obvious that to attain a rating as an arrested case takes somewhat longer than the other classifications.

**III. Deaths:** From Table VI, it may be seen that more than two-fifths of deaths occurred within six months of admission and two-thirds within the first year. This means to us that the major cause of death was tuberculosis and not the treatment for the disease. Catastrophies incident to the establishment of effective collapse measures occurred, but not to an extent which would vary the essential warning of these figures. The disease is too far advanced before the patient enters the sanatorium. In Table IV, it is seen

that of the 105 deaths, 101 came from the far advanced group.

It should be emphasized once more, at this point, that not only does the advanced stage of the disease play a part in the fatal termination, but the advanced age of the patient as well.

**IV. Arrest of disease:** As a corollary, it may be stated that the less advanced the disease on admission, the greater the likelihood of a favorable result from treatment. And, once again, referring to the age tables, the younger patients, in our experience, have a lower mortality.

**V. Patients leaving the sanatorium against medical advice:** 152 patients departed on their own responsibility, contrary to the attending physician's advice. Possibly, as many reasons could be assigned for this action. In general, however, they can be classified in some such scheme as the following:

(1) Inability to adjust to sanatorium routine. These patients are divisible roughly into two groups: (a) Those who are removed quickly from a very active existence into the isolation and quiet of a sanatorium where the watchword is rest, not activity, and where the transition from a diagnosis of the illness to its treatment is made suddenly before the patient has had an opportunity to adjust mentally to a prolonged absence from his home environment and responsibilities. (b) Those who have been under home treatment for tuberculosis and who have decided to enter a sanatorium. Here the discipline of an institution becomes irksome, and doting relatives are replaced by competent nurses who cater to the needs rather than the whims of the patients.

(2) Sociological factors: (a) Marital: Human relationships being what they are and depending on continued contact for their satisfactory maintenance, enforced physical separation particularly of marital partners, frequently leads to "civil" separation. In order to save the marriage, patients leave the institution. (b) In families where the temporary dissolution of the home frequently arises from the absence of one parent, complaints that children are not properly placed or cared for result in the patient's departure to reestablish the home

before he is declared physically competent to do so; (c) Similarly, relief of financial stresses is sought by some, necessitating prolonged absence from the sanatorium.

(3) On occasion, desperately ill or dying patients, clearly cognizant of their terminal condition, beg relatives to remove them so that they may "die at home".

(4) Inability to observe further improvement: Many patients reach a somewhat stationary point where it is deemed wise not to increase their physical activity for a time. This frequently occurs when they are really feeling their best, and the prospect of a modified rest regimen of possibly months' duration overwhelms them. Such patients tend to give up attempts at further disciplined treatment, and depart for home to try to get along as best they can on a limited activity schedule. Obviously, they defeat their purpose, for without clinical guidance and encouragement, some remain chronic invalids long after they should have resumed a full activity schedule. Others, relying on their feeling of well-being only, engage in too much activity, and soon find that they must seek readmission to the sanatorium, or, out of shame, defer entry beyond a time when it is possible to provide effective therapy.

(5) Seeking a more favorable climate: Still comfortably established in the lay mind is the association of a favorable climate with progress in the fight against tuberculosis. A number of residents of the state prevail upon their counties to send them to the southwest where they claim they can live at less expense to the county than is entailed by the cost of sanatorium care.

For this large and important group of patients who leave the sanatorium against medical advice, a solution is offered, embracing such points as the following:

(1) Early Diagnosis: The early diagnosis of early tuberculosis would at once provide a more favorable outlook for the end result, and bring about such a result in a shorter period of time. Thus a patient could plan on remaining for a restricted period in the sanatorium, and could arrange his affairs with that end in view. Early diagnosis of the more advanced types of tuberculosis

would also be of great value. The patient would be in better condition to withstand the extensive collapse procedures necessary to restore him to an effective social and economic unit.

(2) Early, intensive restorative treatment: We urge the early application of the most suitable types of active treatment in conjunction with the time-honored principles of rest and good hygienic surroundings. For, by early conversion of sputum, and timely institution of graduated exercise, the patient may safely be released to his home environment in a shorter period.

(3) Sociological investigation: Every effort should be made by the medical social worker to help in the adjustment demanded by the patient's admission to a sanatorium. An alert department at the hospital, co-operating closely with similar agencies in the home can solve numerous problems which cause the patient to leave the institution.

(4) Making the sanatorium significant: If the patient could be brought to realize shortly after his admission what tuberculosis is as a disease, and what it means to him and to his family if uncontrolled, the reasons for the special and general forms of treatment, the significance of a graduated exercise program to fit him to take his place once more in society, he might possibly readjust his outlook sufficiently to allow him to remain at the sanatorium until discharged by the medical board.

#### *Summary and conclusions*

1. The 447 patients discharged from the State Sanatorium, Oakdale, Iowa, during 1937 and 1938 are reviewed.

2. Age and sex tabulations revealed a preponderance of females and a higher incidence of the disease in the older age group.

3. Classification of tuberculous patients on admission disclosed that 89 per cent fell in the advanced groupings.

4. There were 23.7 per cent discharged as arrested; 23.4 per cent died.

5. The more successful end-results were achieved in the less advanced cases.

6. The usual length of sanatorium care was from six months to 2½ years. The duration

was less in the minimal and moderately advanced cases, and was extended in the far advanced group.

7. The death rate increased in the higher decades.

8. Of the deaths, 43.8 per cent occurred within six months of admission; 67.6 per cent

within one year of entrance.

9. Of the 105 deaths, 101 occurred in the far advanced group.

10. 152 patients left the sanatorium against advice. An explanation is offered for this result, and an attempt is made to point toward a solution.

## Indications for Artificial Pneumothorax and Pneumoperitoneum\*

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**C**OLLAPSE therapy for pulmonary tuberculosis is not new and the indications for it, like most standardized therapeutic procedures, have changed considerably since its conception. Our broadened knowledge of respiratory physiology and a fuller experience with artificial rest of the lung are now enabling us to use this type of therapy on a larger number of patients with better results than formerly. However, as in other medical groups, there are among phthisiologists many that run to extremes and, in their enthusiasm, are tempted to apply pneumothorax to almost all cases, while on the other hand there are the conservatives who are distrustful of the newer methods and prefer the time tried treatment of prolonged and strict rest in bed. A discussion of the rationale of pneumothorax and pneumoperitoneum would seem to be in order so as to evaluate the indications for these forms of treatment.

The purposes of pneumothorax may be stated as follows:

1. Relaxation of the affected portion of the lung so as to hasten fibrosis.
2. Reduction of toxæmia by the occlusion, partial or complete, of the lymphatics draining the lesion.
3. Closure of cavities.
4. Prevention of spread.
5. Cessation of hemorrhage.

Let us consider these purposes more in detail.

A relaxation of the tuberculous lesion by the retraction of elastic tissue hastens the formation of scar tissue and permits the fibrous tissue that may have formed already to contract more easily. The tendency to contraction of the diseased areas under pneumothorax has been frequently attributed to small patches of lobular atelectasis. Such a condition readily occurs, particularly in the exudative type of disease, because of the blocking of some of the smaller bronchioles by mucous. Absorption of air takes place distal to the blockage and small sections of atelectasis result. This in turn increases the traction on the lung. Thus we have a mechanical reason to relax the diseased area.

Reduction of toxæmia is a desired attainment in any disease, but in tuberculosis this is to be had often with dramatic suddenness by pneumothorax. Reduction of toxæmia restores the patient's vitality and clinical improvement dates usually from this time. Experience shows that pneumothorax gives its most brilliant results in these acute cases. Poisoning from a tuberculous lesion comes largely through the draining lymphatics and any mechanical factor that will cause an impedence to the flow, such as pneumothorax, will bring about this desired result.

Closure of cavities is always given as the prime purpose of pneumothorax. A tuberculous cavity is a very serious hazard to the patient. Unless the cavity, with its accom-

\* Read before the Annual Meeting of the Pennsylvania Radiological Society, Bedford Springs, Pa., June 10, 1939.



panying positive sputum closes by contraction of fibrous tissue or is closed by collapse therapy, the prognosis is grave and the mortality is 90 per cent in three years. Cavities are usually the source of tubercle bacilli in the sputum and thus it is commonly accepted that a positive sputum indicates a cavity. On this basis we use the sputum examination as a criterion of the efficiency of treatment. A pneumothorax that does not convert a positive sputum into a negative one in 3 to 5 months may be considered as a failure. A small proportion of cavities, 10 to 15 per cent, will close of their own accord under the usual bed rest treatment, but this low proportion applies only to small cavities. It is a mechanical impossibility for the larger ones to disappear without artificial help. The close relationship between a cavity and a positive sputum has been mentioned before, in relation to the suspicion of a cavity when a patient has tubercle bacilli in his expectoration. The only exception to this is a tracheobronchitis of tuberculous etiology. Since only 5 to 10 per cent of cavities can be detected by physical examination it can be readily understood that the responsibility for pneumothorax falls upon the roentgenologist. All x-ray reports of patients suspected of having tuberculosis should be made from stereoscopic films and should include a definite statement as to the presence or absence of cavity formation. If such is present, the exact location of the cavity and a description of its size and character must be given.

A fourth purpose of pneumothorax is to prevent the spread of the lesion, either in the same lung or into the contra-lateral lung. Tuberculosis spreads usually by one or both of two ways, that is by contiguity or by the air passages. The latter is termed "Bronchiogenic". Hematogenous dissemination is not very common, especially in adults. Bronchiogenic spread has been discussed and its importance stressed under the relationship of cavity formation to positive sputum. Thus a bronchiogenic dissemination is automatically controlled by the closure of cavities. Spread by contiguity is mostly dependent on lymphatic drainage and that unmeasurable factor the inherent resistance of the individual and his ability to form fibrous tissue. There are a few unfortunate individuals in whom there

seems to be no resistance whatsoever and in whom, despite a perfect pneumothorax, the disease progresses in the collapsed lung and then into the other lung with eventual death. The great majority, fortunately, react to collapse by an increased resistance to the spread of the lesion. This may be attributed to an impedance to the lymphatic flow, a relative anoxaemia in the circulation of the affected lung, and a tendency to an increased  $\text{CO}_2$  tension in the pulmonary circulation and lymph of the relaxed lung. These factors plus the formation of small areas of atelectasis, lobular in type due to blockage of the bronchioles by mucous or by kinking in the process of collapse, tends to hasten the formation of fibrous tissue and this in turn forms a barrier to further advances of the disease. Thus the spread by contiguity is decreased or stopped in a relaxed or collapsed lung.

Another purpose of the induction of pneumothorax is to control pulmonary hemorrhage. Hemoptysis is a danger sign and frightens the physician as well as the patient. Pulmonary hemorrhage may be venous or arterial in origin. If the latter, the patient drowns in his own blood by the profuse bleeding and death ensues in two or three minutes from the onset. Venous bleeding is slower and may be prolonged intermittently for several days. This is the type that is amenable to collapse therapy. It is not necessary to insufflate a large quantity of air, since moderate amounts such as 500 c.c. seem to be sufficient in most cases to slow the circulation and thus control bleeding. As bleeding arises in most instances from cavities, closure of them by pneumothorax tends to preclude this possibility.

Having discussed the purposes of pneumothorax, it is in order to discuss the various types of lesions to which it can be applied. Basically, one may say that any type of lesion that threatens the life of the patient should be under collapse treatment. It is generally conceded that the best results are obtained in the exudative lesions that have failed to establish a favorable trend under bed rest alone. Aycock and Keller<sup>1</sup> in a very careful study of this problem found satisfactory results in 75 per cent of their exudative cases as contrasted to much lower percentages in the caseous pneumonic and fibro-caseous

groups. The poor results in the last two groups are attributed to pleural adhesions and thick walled unyielding cavities. The exudative lesion is one of rapid change and massive pleural adhesions are not found until the disease is far advanced.

The stage of the disease is an important factor affecting the indication and success of the treatment. The great tragedy of an ineffectual pneumothorax is due to the late stage in which it was begun. There is too great a tendency to postpone pneumothorax because the lesion is small. As Barnwell<sup>2</sup> says, "it is a mistake to assume that because the lesion is small its progress will be slow." Delay in instituting pneumothorax permits the formation of pleural adhesions, so fatal to a satisfactory outcome.

Pneumothorax will give a much better result in a localized lesion than in a diffuse one. For example, disease that is confined to two lobes will respond to treatment when a similar amount of disease scattered throughout both lungs might be fatal.

Bi-lateral pneumothorax is especially indicated where cavity formation is limited to the upper lobe of each lung. It may be said that when any two of the five lobes remain free of disease, collapse of the remaining lobes is usually feasible. At least two lobes free of disease are required to maintain respiration without dyspnea.

Spontaneous pneumothorax is sometimes to be considered as an indication for pneumothorax. Not all cases of spontaneous pneumothorax are due to tuberculosis, so that it is a good plan to re-expand the lung until it almost reaches the chest wall and then to take a roentgenogram. We can then determine if a lesion is present and, if such is the case, the pneumothorax should be maintained and the patient treated as any other pneumothorax case.

Pleural effusions are frequently an indication for pneumothorax. It is reasonable to assume that most pleural effusions of unknown origin are tuberculous until proven otherwise and these, together with effusions of known tuberculous etiology, should be aspirated and replaced with air thus converting it into a pneumothorax. Subsequent treatment is that of a standard pneumothorax routine. Advantages of this treatment may be

listed as follows: (a) Toxic symptoms are lessened. (b) A good view of the underlying lung may be had if the pleura is not too greatly thickened. (c) Tendency of empyema to develop in long standing effusions is lessened. (d) Changes in the character of the fluid are promptly noted and appropriate treatment can be applied. (e) The lung re-expands evenly upon the absorption of air. (f) If there is an underlying pulmonary lesion the conversion of the effusion into a pneumothorax secures the collapse before adhesions can form during the absorption of fluid. This advantage cannot be emphasized too strongly since the cause of an unsuccessful pneumothorax can be traced to an old pleural effusion that was aspirated and the lung permitted to completely re-expand.

In addition to the above indications for pneumothorax therapy, pneumothorax is used diagnostically. This applies to suspected tumors of the lung in which it is necessary to have an outline of the pleura to note its bulging and irregularities. A diagnostic pneumothorax permits us to know whether the tumor is intra or extra-pulmonary and it demonstrates the presence of pleural adhesions.

The indications for pneumoperitoneum are slightly different from those for pneumothorax. For some years it has been noted that a rise of the diaphragm in the absence of myocardial disease had a beneficial effect on the breathing of patients with emphysema. In cases with basal tuberculosis it is of definite help and in those in whom a phrenic nerve interruption has been done, a pneumoperitoneum will greatly increase the clinical benefits by raising the diaphragm still more. Occasionally, there is a patient whose condition is not sufficiently good to warrant a thoracoplasty, but who may be improved by pneumoperitoneum to such an extent that the operation can then be performed. It has long been noted that tuberculous activity is not as apparent in pregnancy as it is after delivery. This has been attributed to the elevation of the diaphragm during pregnancy. The subsequent increased activity after delivery is due to the greater movements of the diaphragm later. Pneumoperitoneum is indicated in these patients following their confinement. The advantages of pneumoperi-

toneum are the ease with which it can be carried on, and, when necessary, be discontinued. There is no awkward belt to be worn and there is no interference with the nerve supply to the diaphragm. Recent studies<sup>3</sup> on the long continued effect of air in the peritoneal space showed that it caused no consistent changes in any of the abdominal viscera.

These remarks on the indications for pneumothorax and pneumoperitoneum are intimately connected with our work as roentgenologists. The diagnosis and indications are, in practically all cases, entirely depend-

ent upon the interpretation of the films and, therefore, a pertinent knowledge of these indications will enable us to more fully cooperate with the internist.

2239 North Second Street.

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## Committee for the Advancement of Tuberculosis Organization in Medicine AMERICAN COLLEGE OF CHEST PHYSICIANS

Annual Report 1938-1939 for Northwestern States,  
Idaho, Montana, Oregon and Washington\*

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IN THE following report an attempt has been made to bring to the members of the College and to the readers of *Diseases of the Chest*, an account of the various tuberculosis activities of the four states of the Northwest, namely, Idaho, Montana, Oregon and Washington. It should be remembered that the accomplishments and the progress herein reported are not considered to be the result of the efforts of the committee alone but the contribution of all groups—official and non official—interested in tuberculosis eradication.

A study to determine the pertinent factors concerning tuberculosis work was undertaken and covered such subjects as tuberculosis organization history, case finding, case reporting and rehabilitation. In addition, sta-

tistical data giving population, area, tuberculosis deaths, reported cases, hospital facilities and health education was assembled. Material for this study was secured chiefly by the questionnaire method. (A copy of the questionnaire used is attached—Exhibit A).

#### Area and Population

The area of the four states is three hundred ninety six thousand seven hundred and eleven miles (396,711) having an estimated population in 1937 of three million seven hundred and seventeen thousand (3,717,000) which gives an average population of 9.3 persons per square mile and this is undoubtedly a natural factor contributing to a low tuberculosis death rate.

#### Tuberculosis Deaths and Death-Rates

The 1937 tuberculosis deaths for the four states were 1469. The death rate in each of the four states was well below that of the nation as a whole. Montana was the only

\* Presented before the Fifth Annual Meeting of the American College of Chest Physicians, held at St. Louis, Missouri, June 14, 1939.

\*\*Governor of the American College of Chest Physicians for Washington, and a member of the Committee for the Advancement of Tuberculosis in Organized Medicine.



state in the group that showed a slight increase in its rate, climbing from 41.4 in 1936 to 43.6 in 1937. The Indian population, numbering 35,000 in the four states, affects the rate adversely. The tuberculosis death rate among Indians ranged from 364.9 in Montana to 550.9 in Washington as compared to 39.5 for the general population of the states as a group. (A report showing deaths and rates by states is attached—Exhibit B).

#### *Organization History*

The history of tuberculosis organization proved interesting and showed that a state medical association led the field in recognizing the need for tuberculosis control. More than forty years ago, 1897, the first tuberculosis committee of three members was appointed by the Washington State Medical Association. Similar action by the medical group in the other states followed years later in 1928 and 1930. At the present time the tuberculosis committee in Idaho is composed of six members, Montana four, Oregon five, and Washington nine, six of whom are fellows of the College.

#### *Sanatoria*

The first effort toward health education was made when tuberculosis organizations, affiliated with the National Tuberculosis Association were organized in the four states as follows: Washington 1906, Oregon 1915, Montana and Idaho 1916. The public interest in tuberculosis stimulated by these organizations resulted in the enactment of legislation for the erection of sanatoria and the establishment of public health nursing service. There are now 2434 beds provided in public and private sanatoria for the treatment of tuberculosis in the four states. This gives a capacity of 1.65 beds per death for the entire area. Of the sanatorium beds available 399 are for Indians only and 206 are maintained for the exclusive use of veterans. The above number of beds does not include provisions that are made for inmates of penal or mental institutions.

Additional beds are being planned in each of the four states. At the present time an 80 bed tuberculosis hospital is under construc-

tion in Portland, Oregon. A state sanatorium of 80 beds was authorized by the Idaho legislature in 1937, but due to legal difficulties concerning the site its construction is still pending. Washington is contemplating increasing its bed capacity under the district sanatorium plan and Montana is also planning for added beds. (A report showing location of beds by states is attached—Exhibit C).

#### *Case Finding*

A search for the discovery of active as well as potential tuberculosis cases is being carried on in each of the four states. The methods used are diagnostic clinics, Mantoux skin testing with x-ray service, public health nursing, and a vigorous health education campaign, directed chiefly by the Tuberculosis Association, Anti-tuberculosis Leagues, and Public Health Associations, urging the public to seek medical attention. Statewide clinic service open to the public is available in 3 of the 4 states (Idaho, Montana, and Washington) and permanent diagnostic clinics are maintained in the larger cities in Montana, Oregon and Washington. These clinics are operated usually by the city or through the sanatorium facilities. One clinic in Portland is open only to indigent or low income groups, the remainder are public. Idaho operates at regular intervals a pneumothorax clinic for discharged sanatorium patients. The tuberculin test has been widely used as a case finding project in all four states and the students of practically every high school and college have had an opportunity for such service. The major part of this service has been provided by the Tuberculosis Associations. The importance of x-ray films for all reactors is stressed and the majority of those showing an infection have access to such service. The tuberculosis leagues have provided funds for both the skin test and x-ray as a regular part of their student health examination.

The practice of requiring skin tests for teachers, student nurses, food handlers and beauticians is yet a local procedure with the most emphasis placed on the testing of teachers and student nurses. The major portion of the counties of the four states employ public health nurses who assist in the case finding

work. Some counties are still without nursing service of any kind.

Free laboratory service for sputum examination is provided by the State Department of Health in each state to private physicians. X-ray consultation is also available in every state either through the sanatoria, the State Department of Health, the Tuberculosis Association, the chest division of the University of Oregon Medical School or the tuberculosis committee of the Medical Associations.

Case finding efforts in the four states compare favorably with the standard which has been tentatively set nationally at two new cases reported to each death in any year. In 1937 this standard was exceeded by each one of the states in this district.

#### *Case Reporting*

The number of new cases reported in 1937 was 3014, giving a rate of 2.05 cases per death for the entire area. Idaho and Oregon showed an increase in reported cases over the previous year while Montana and Washington decreased slightly. (A report by states is attached—Exhibit D).

Case reporting is generally adhered to by the medical profession in all of the states but in each state a certain number of cases were first reported by the death certificate.

#### *Rehabilitation*

A program of rehabilitation is being developed in the four states. Material assistance is being given in this work by the Vocational Rehabilitation Department of the several states. Approximately 100 cases are now being served in this manner. Placement of such patients is also handled chiefly by these departments. Some effort is made by the medical director of individual sanatoria toward vocational rehabilitation, but the large part of such work is confined to the occupational therapy field.

The follow up of discharged patients is thoroughly inadequate in practically every state due to a lack of out patient departments, limited clinic facilities and nursing service. There is no provision for sheltered

employment for those handicapped by tuberculosis.

#### *Health Education*

The greater amount of work in the educational field has been done by the tuberculosis associations and affiliated Leagues through talks to clubs, industrial concerns, civic organizations, and school groups. The additional aids such as motion pictures, educational charts and a wide dissemination of printed material, most of which is produced by the National Tuberculosis Association are widely used. Public exhibits on tuberculosis have also been arranged and presented at every opportunity. Newspaper and magazine articles have been prepared and distributed. Abstracts on tuberculosis, also prepared by the National Tuberculosis Association, have been made available monthly by the tuberculosis leagues to many individual physicians, engaged in private practice. The assistance of physicians has been asked by the tuberculosis associations in presenting certain medical phases to the public. This service has been given chiefly through papers, illustrated lectures and talks. In addition the tuberculosis committees of the State Medical Associations have arranged programs dealing with case finding, diagnosis, x-ray, and treatment which have been presented before many county medical societies.

Practically all of the physicians doing tuberculosis work in the four states have responded at various times during the year with talks or lectures before selected groups such as county medical societies, student nursing classes, tuberculosis workers and college students. Panel discussions and lectures have also been given before annual meetings and institutes held for those interested in public health.

#### *General Information*

There are approximately 15 physicians in the four states who limit their practice to chest work. The magazine "Diseases of the Chest" reaches 377 subscribers in this territory and there are 20 Fellows of the American College of Chest Physicians. Washington 13, Oregon 4, Montana 1, Idaho 2.

## DISEASES OF THE CHEST

## EXHIBIT A.

## TUBERCULOSIS QUESTIONNAIRE

HISTORY: When was first Tuberculosis Committee appointed by State Medical Association

Give names of present committee members

Give date State Tuberculosis Association was organized First executive

secretary appointed First seal sale held First nursing

service established where by whom

Legislation enacted What points did this cover

CASE-FINDING: Is there state wide clinic service Are there permanent diagnostic

clinics in the larger cities Give type Do they operate daily, bi-

weekly or weekly Are clinics open to public or to indigent only

Do the sanatoria operate clinics Is the tuberculin test widely used

by private physicians Have most high schools had the test

colleges Are tuberculin tests required of food handlers, student nurses, beauticians,

teachers, etc. Do all counties

have full time nursing service If not, how many

CASE-REPORTING: Is case reporting generally adhered to How many cases in 1937

were first reported by death certificate Is free laboratory service furnished by the

State Dept. of Health to private physicians for sputum examinations Is there any

x-ray consultation available if so, by whom and where

How many doctors in the state limit their practice to chest work

How many doctors are Fellows of the College of Chest Physicians

REHABILITATION: Is any program being developed Does the Vocational Re-

habilitation Dept. include service to tuberculosis cases How many are taking

training now What talks, papers, exhibits, and programs on tuberculosis have

been given during the past several months in your state and by whom

## POPULATION DATA

## IDAHO, MONTANA, OREGON, WASHINGTON

STATES	AREA	POPULATION 1930	INDIAN POP. 1930	POPULATION 1937 (Est.)	POP. (1937 Est.) Per sq. mile
Idaho	83,888	445,032	3,638	493,000	5.9
Montana	146,997	537,606	14,798	539,000	3.7
Oregon	96,699	953,786	4,776	1,027,000	10.6
Washington	69,127	1,563,396	11,253	1,658,000	24.0
	396,711	3,499,820	34,465	3,717,000	9.3



# DISEASES OF THE CHEST

DECEMBER

## EXHIBIT B.

### TUBERCULOSIS DEATHS, DEATH RATES CASES AND CASES PER DEATH 1936 - 1937 BY STATES

STATES	POPULATION		TUBERCULOSIS DEATHS		DEATH RATE		NEW CASES REPORTED		CASES PER DEATH	
	1936 Est.	1937 Est.	1936	1937	1936	1937	1936	1937	1936	1937
Idaho	485,000	493,000	120	102	24.7	20.7	169	218	1.41	2.14
Montana	531,000	539,000	220	235	41.4	43.6	497	486	2.26	2.07
Oregon	1,017,000	1,027,000	372	364	36.6	35.4	717	741	1.93	2.04
Washington	1,643,000	1,658,000	822	768	50.0	46.3	1789	1569	2.18	2.04
	3,676,000	3,717,000	1534	1469	41.7	39.5	3172	3014	2.07	2.05
U. S.										
1936	128,429,000		71,239		55.5		107,086		1.51	
1927	129,257,000		69,151		53.5		110,493		1.65	

## EXHIBIT C.

### SANATORIUM FACILITIES

Idaho—Montana—Oregon—Washington

National Tuberculosis Association 1938\*

American Medical Association 1933\*\*

STATES	SANATORIA		FED. INST.		HOSP. WARDS	TOTAL	SANATORIA		FED. INST.		HOSP. WARDS			TOTAL
	Pub.	Pri.	Ind.	Vet.			Pub.	Pri.	Ind.	Vet.	Pub. St.	Co.	Pri.	
Idaho			132		45	177			132	24			60	216
Montana	200		37			237	150		60	40			10	260
Oregon	516	78		32		626	448	65	2	32	15	40	20	622
Washington	841	145	230	174	4	1394	825	136	308	219	27	mental		1531
												16	penal	

\* From 1938 Sanatorium Directory N. T. A.

\*\*Survey of Tuberculosis Hospital by A. M. A. 1933.

## EXHIBIT D.

Beds for the treatment of tuberculosis in Idaho, Montana, Oregon, and Washington are located, according to the Sanatorium directory—National Tuberculosis Association 1938 in the following institutions:

*Idaho:* Two general hospitals maintain separate wards for tuberculosis. A sanatorium school operated by the Department of Interior, office of Indian Affairs provides care for Indians.

*Note—*A state sanatorium of 80 beds was authorized by the Legislature in 1937 but due to legal difficulties concerning the site its construction is still pending.

*Montana:* One state sanatorium is main-

tained. Three Federal general hospitals for Indians. Each has provisions for a small number of tuberculosis cases.

*Oregon:* Two state sanatoria and one county pavilion are provided. There is one private sanatorium and the Federal government makes provision for cases of tuberculosis in a general hospital for ex-service men.

*Washington:* There are six county sanatoria; one municipal sanatorium; two private sanatoria; one Federal hospital for Indians with provisions for tuberculosis cases; one Federal sanatorium for Indians and two Federal hospitals with provisions for tuberculous ex-service men.

*Data on Tuberculosis in Montana*

Population (Est. 1937) 539,000. Indian Population (1930) 14,798. Area 146,997 sq. mi. Population per square mile 3.7. Number of counties in state 56.

Tuberculosis deaths 1937, 235. White 178, Indian 54, Negroes 2, Yellow 1, Mexican 1. Death rate 43.6.

New cases reported 1937, 486. Rates of cases per death 2.07.

Hospital facilities; Beds available 237. White 200, Indian 37.

*Data on Tuberculosis in Oregon*

Population (Est. 1937) 1,027,000. Indian Population (1930) 4,776. Area 96,699 sq. mi.

Population per square mile 10.6. Number of counties in state 36.

Tuberculosis deaths 1937, 364. White—Indian —. Death rate 35.4.

New cases reported 1937, 741. Rates of cases per death 2.04.

Hospital facilities; Beds available 626. White 626, Indian 0.

*Data on Tuberculosis in Idaho*

Population (Est. 1937) 493,000. Indian Population (1930) 3,638. Area 83,888 sq. mi.

Population per square mile 5.9. Number of counties in state 44.

Tuberculosis deaths 1937, 102. White 90, Indian 18. Death rate 20.7.

New cases reported 1937, 218. Rates of cases per death 2.14.

Hospital facilities; Beds available 177. White 45, Indian 132.

*Data on Tuberculosis in Washington*

Population (Est. 1937) 1,658,000. Indian Population (1930) 11,253. Area 69,127 sq. mi.

Population per square mile 24.0. Number of counties in state 39.

Tuberculosis deaths 1937, 768. White 706, Indian 62. Death rate 46.3.

New cases reported 1937, 1569. Rate of cases per death 2.04.

Hospital facilities; Beds available 1394. White 1164, Indian 230.

*Summary*

While not unexpected, it is nevertheless gratifying to note that the tuberculosis death-rate for 1937 in all four states, Idaho, Montana, Oregon and Washington, is well below that of the nation as a whole. Montana was the only state in the group that showed a slight increase in its rate, climbing from 41.4 in 1936 to 43.6 in 1937. The other three states were among those showing a decrease. The figures for 1938 are not yet available.

The vast expanse of territory, 396,711 square miles, with an average population of 9.3 persons per square mile is undoubtedly a natural factor contributing to a low death rate. There is a racial factor, however, which affects the rate adversely. That is the Indian population which numbers 35,000 in the four states. The tuberculosis death rate in 1937 among the Indians of Washington was 550.9 per 100,000 compared to 46.3 for the state as a whole.

Case finding efforts in the four states compare favorably with the standard which has been tentatively set nationally at two new cases reported to each death in any year. In 1937 this standard was exceeded by each one of the states in this district. In the territory covered, with an estimated 1937 population of 3,717,000, the number of tuberculosis deaths was 1,469, giving a death rate of 39.5; the number of new cases reported was 3,014, giving the rate of 2.05 cases per death for the entire area. Idaho and Oregon showed an increase in reported cases over the previous year while Montana and Washington decreased slightly.

The sanatorium facilities for the four states provide 2,434 beds for the treatment of tuberculosis cases. Of this number 399 are for Indians only and 206 are maintained for the exclusive use of veterans. This number does not include provisions that are made for inmates of penal or mental institutions.

**READER'S NOTICE**

Through an error, the advertisement of the Biochemical Research Laboratories, Chicago, Illinois, was omitted from the November issue of the Journal.

## The General Practitioner and Early Diagnosis of Tuberculosis

NELSON MERCER, M.D.\*  
*Philadelphia, Pennsylvania*

The majority of tuberculous patients are moderately or far advanced when admitted to sanatoria for treatment.

This has been noted by the writer in several states in which he has worked during the past two decades.

Earlier diagnosis is essential to lower the morbidity and mortality rates of tuberculosis, and to reduce the period of sanatorium treatment.

General practitioners are the front line troops in the fight against tuberculosis. They should always suspect its presence and utilize all diagnostic procedures available for each patient under observation.

This can be accomplished by annual routine surveys all school children and teachers, factory workers, employees in every line of business, and the professions, including all contacts with cases of tuberculosis. The annual early diagnosis campaign of the National Tuberculosis Association also discovers numerous active cases throughout the United States.

X-ray of the chest is considered the most important factor in making an early diagnosis of pulmonary tuberculosis, regardless of the findings of physical examination by general practitioners or by experienced chest specialists, and each person should be x-rayed on the first visit to a physician's office or to a clinic.

Mantoux skin testing should be done on all school children, and positive reactors x-rayed at once. All junior high school pupils should be x-rayed as a routine precaution at that critical period of adolescence with the mental and physical strain of study and athletics, now considered so necessary to development.

This writer has been impressed by the number of new admissions to sanatoria with far advanced tuberculosis of the lungs who have

been under treatment for months or years for so-called gastritis, enteritis, sinusitis, tonsillitis, laryngitis, bronchitis, asthma, otitis media, and recurrent attacks of pleurisy, grippe, or pneumonia.

Patients frequently give this experience in their histories, and quite a large percentage state that tuberculosis was not diagnosed until they went to a tuberculosis clinic or a hospital and were x-rayed as a routine procedure.

It would appear that all general practitioners and specialists in any medical or surgical field would at least be on the alert always to suspect tuberculosis in any of the conditions noted above, and determine definitely whether or not tuberculosis is the underlying cause by having a chest x-ray, sputum examination for tubercle bacilli, etc., made on the first examination of the patient.

A diagnosis of pulmonary tuberculosis and any of its complications would greatly aid the physician and the patient in their efforts to plan a program of treatment and make all necessary family, business, economic, and financial arrangements which are so essential to the welfare of the sick person and his relatives.

Worthy of comment, also, is the rather frequent advice to tuberculous patients to take the cure at home. This, of course, is almost impossible, due to the activities of the family, inquiring visitors, ringing telephone and door bells, etc. Moreover, no tuberculous patient with positive sputum should remain at his home where he is a constant source of infection to his family and neighbors, in short, a public menace to the community.

The Tuberculosis Section of the Philadelphia County Medical Society recently adopted a plan with the purpose of interesting general practitioners in the early diagnosis and treatment of pulmonary tuberculosis in their patients.

\* Resident Physician, Home for Consumptives, Chestnut Hill, Pa.



Monthly clinical conferences will be held in the Medical Society building to which all practitioners are invited to bring the data of any patients who present difficulties in diagnosis and treatment, and in whom tuberculosis is suspected or definitely diagnosed.

Each conference will be conducted as a round-table discussion, and the attending specialists who are present, will render advice

to the physician to help solve the problem his patient presents.

This is considered one of the most promising developments in the campaign against tuberculosis of recent years, and it is hoped will serve as an incentive to other communities to increase the interest of the general practitioner, for in his hands largely depends the ultimate solution of the tuberculosis problem throughout the country.

## Organization News

### COMMITTEES NAMED FOR 1940 MEETING OF THE COLLEGE

Dr. Ralph C. Matson, Portland, Oregon, president of the American College of Chest Physicians announces the appointment of the following members who will serve on the committees for the sixth annual meeting of the College to be held at the Biltmore Hotel, New York City, June 8-10, 1940.

#### SCIENTIFIC PROGRAMS

George Ornstein, M.D., N. Y., *Chairman*.

*Medical Section:* Foster Murray, M.D., Brooklyn, N. Y., *Chairman*; James S. Edlin, M.D., New York City; Raphael Bendove, M.D., New York City; and Barnett P. Stivelman, M.D., New York City.

*Surgical Section:* David Ulmar, M.D., New York City, *Chairman*; Nagla M. Laf Loofy, M.D., Brooklyn, N. Y.; Stanley L. Wang, M.D., New York City, and George A. Lassman, M.D., New York City.

*Clinical Section:* Edward P. Eglee, M.D., New York City, *Chairman*; Maurice Kovnat, M.D., Staten Island, N. Y.; Eli H. Rubin, M.D., Bronx, N. Y.; and Henry L. Dorfman, M.D., New York City.

*Entertainment Committee:* James S. Edlin, M.D., New York City, *Chairman*; Alice D. Weber, M.D., New York City, *Vice-Chairman*; Sydney Bassin, M.D., New York City; Julius P. Dworetzky, M.D., Liberty, N. Y.; Irving I. Sarot, M.D., New York City; Chas. W. Rieber, M.D., Forest Hills, N. Y.; Emanuel Singer, M.D., New York City; Harry St. John Williams, M.D., Poughkeepsie, N. Y.; and Morris Tannenbaum, M.D., Bronx, New York.

*General Arrangements:* Edgar Mayer, M.D., New York City, *Chairman*; Harry Golembe,

M.D., Liberty, N. Y., *Vice Chairman*; Willard J. Davies, M.D., Rockville Center, N. Y.; George Foster Herben, M.D., Yonkers, N. Y.; Israel Kaufman, M.D., Brooklyn, N. Y.; Edwin P. Kolb, M.D., Holtsville, N. Y.; A. A. Leonidoff, M.D., Poughkeepsie, N. Y.; John M. Nicklas, M.D., Valhalla, N. Y.; and Clarence A. Read, M.D., New Rochelle, N. Y.

#### ROUND TABLE LUNCHEONS

George Ornstein, M.D., New York City, Chairman of the Scientific Programs Committee announces that there will be Round Table Luncheon Discussions on Saturday, June 8th and Sunday, June 9th; in connection with the Sixth Annual Meeting of the American College of Chest Physicians to be held at the Biltmore Hotel, New York City. The number will be limited. Reservations are to be made at once. Those members coming to the round table luncheons will write to Dr. E. P. Eglee, 105 East 53rd Street, New York City, mentioning subjects to be discussed.

#### HOTEL ACCOMMODATIONS

In view of the fact that choice hotel accommodations are difficult to obtain for the meetings of the American Medical Association; unless arrangements for such accommodations are made far in advance of the meetings; the Committee on General Arrangements urges the Fellows of the College to communicate immediately with the Executive Secretary of the College at El Paso, Texas; and designate their needs for hotel accommodations.

### TUBERCULOSIS ORGANIZATION IN MEDICINE

The Committee for the Advancement of Tuberculosis Organization in Medicine of the American College of Chest Physicians has launched a campaign to organize a Tuberculosis Committee in every state medical society which has not as yet set up such a committee. In those states where Tuberculosis Committees have been established, it is the plan of the committee to urge the establishment of similar committees in every county medical society to cooperate with the state committee in accordance with the "Pennsylvania Plan"; as endorsed by the American College of Chest Physicians. Copies of the "Plan" have been mailed to the chairman of Tuberculosis Committees and to the Governors of the College in the different states. Copies of the "Pennsylvania Plan" may be had upon request by any interested physician.

The United States has been divided into eleven districts under the chairmanship of Dr. Benjamin Goldberg of Chicago. They are as follows:

#### SUB-CHAIRMAN OF STATE GROUPINGS

*Dr. M. Jay Flipse*

Miami, Florida

Florida, Alabama, Georgia.

*Dr. Elmer E. Glenn*

Springfield, Missouri

Missouri, Iowa, Kansas, \*North Dakota, \*South Dakota, Nebraska and Minnesota.

*Dr. Harry Golembe*

Liberty, New York

New York, Connecticut, New Jersey and Rhode Island.

*Dr. Edward A. Greco*

Portland, Maine

Maine, Massachusetts, New Hampshire and Vermont.

*Dr. Louis Mark*

Columbus, Ohio

Ohio, Pennsylvania, Maryland and West Virginia.

*Dr. James M. Odell*

The Dallas, Oregon

Oregon, Idaho, Montana, Washington and \*Wyoming.

*Dr. Karl Schaffle*

Asheville, N. C.

North Carolina, Delaware, District of Columbia, South Carolina and Virginia.

*Dr. Benjamin A. Shepard*

Oshkosh, Michigan

Michigan, Illinois, Indiana and Wisconsin.

\* No governors of the College in these states.

*Dr. Paul A. Turner*

Louisville, Kentucky

Kentucky, Louisiana, Mississippi and Tennessee.

*Dr. Wm. C. Voorsanger*

San Francisco, Calif.

California, Arizona, \*Nevada and Utah.

*Dr. Chas. J. Koerth*

San Antonio, Texas

Texas, New Mexico, Oklahoma, Arkansas and Colorado.

The sub-chairman for each district will cooperate with the Governors of the College and with the chairman of the Tuberculosis Committees already established in the states in their districts to further the completion of the "Pennsylvania Plan".

### STATE TUBERCULOSIS COMMITTEE CHAIRMAN

Twenty five states, the Philippine Islands and Puerto Rico have reported that Tuberculosis Committees have been appointed as standing committees of their respective state medical societies. The following physicians are chairmen of their state committees:

#### STATE CHAIRMAN OF TUBERCULOSIS COMMITTEES IN ORGANIZED MEDICINE

*Arkansas*

*Dr. A. C. Shipp*, Little Rock.

*Arizona*

\**Dr. E. W. Phillips*, Phoenix.

*California*

\**Dr. Wm. C. Voorsanger*, San Francisco.

*Colorado*

\**Dr. John B. Crouch*, Colorado Springs.

*Delaware*

*Dr. M. I. Samuel*, Wilmington.

*Florida*

\**Dr. M. Jay Flipse*, Miami.

*Georgia*

\**Dr. Champ H. Holmes*, Atlanta.

*Indiana*

\**Dr. Jas. H. Stygall*, Indianapolis.

*Kansas*

*Dr. H. N. Tihen*, Wichita.

*Maine*

\**Dr. George E. Young*, Skowhegan.

*Missouri*

\**Dr. Elmer E. Glenn*, Springfield.

*Montana*

\**Dr. Frank I. Terrill*, Deer Lodge.

*Nebraska*

*Dr. E. W. Hancock*, Lincoln.

*New Hampshire*

\**Dr. Robert B. Kerr*, Manchester.

*New Mexico*

\**Dr. LeRoy S. Peters*, Albuquerque.



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Associate Physicians

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Physician-in-Charge  
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### MODERATE RATES

Descriptive Booklet on Request

### MEDICAL DIRECTORS

Ralph C. Matson, M.D., & Marr Bisailon, M.D.

1004 Stevens Building

Portland, Oregon



*North Carolina*

Dr. S. M. Bittenger, Black Mountain.

*Oklahoma*

\*Dr. Robert M. Shepard, Tulsa.

*Oregon*

\*Dr. Marr M. Bisailon, Portland.

*Pennsylvania*

\*Dr. Frank Walton Burge, Philadelphia.

*Rhode Island*

Dr. Philip Batchelder, Providence.

*Tennessee*

\*Dr. W. S. Rude, Ridgetop.

*Texas*

\*Dr. Robert B. Homan, Sr., El Paso.

*Utah*

Dr. Ivan Thompson, Ogden.

*Virginia*

Dr. Edgar C. Harper, Richmond.

*Washington*

\*Dr. John E. Nelson, Seattle.

*Philippine Islands*

\*Dr. Miguel C. Canizares, Manila.

*Puerto Rico*

\*Dr. Jacob Smith, Rio Piedras.

\* Seventeen of the chairmen of the State committees are fellows of the American College of Chest Physi-

#### DR. MATSON APPOINTED CHIEF SURGEON OF NEW HOSPITAL

Dr. Ralph C. Matson, president of the American College of Chest Physicians, who is Associate Clinical Professor of Surgery and Associate Clinical Professor of Medicine of the University of Oregon Medical School, has been appointed Chief Surgeon of the new University State Tuberculosis Hospital. This hospital, an eighty bed institution, opened for the admission of patients on November 1st. It is functioning as a teaching center under the University of Oregon Medical School, and offers a three year course of training in both the medical and surgical phases of the treatment of pulmonary tuberculosis.

#### ELECTED PRESIDENT OF THE SOUTH- WESTERN MEDICAL SOCIETY

Dr. Orville E. Egbert, El Paso, Texas, Governor of the American College of Chest Physicians for Texas; was installed as the President of the Southwestern Medical Society at their twenty fifth annual meeting held at El Paso, Texas, November 9-11. Dr. Howell S. Randolph, Phoenix, Arizona, the retiring president of the society, is also a Fellow of the American College of Chest Physicians. The 1940 meeting of the Southwestern Medical Society will be held at Tucson, Arizona.

#### STATISTICAL COMMITTEE

The Committee on Statistical Surveys of the American College of Chest Physicians is preparing a questionnaire to be mailed to the superintendents and medical directors of all of the sanatoria in the United States. The questionnaire will attempt to collect up-to-date information on the present facilities for the care of the tuberculous, the need for additional facilities; the trend of modern therapy in the treatment of chest conditions; the need for better housing facilities for resident physicians, and the need for adequate remuneration for physicians employed by municipalities. The committee will appreciate having the questionnaires filled in and returned promptly. The members of the Statistical Committee are:

Dr. J. Winthrop Peabody, Washington, D. C., *Chairman*.

Dr. John H. Allen, Omaha, Nebr., *Vice-Chairman*.

Dr. Byron M. Harman, Verona, N. J.

Dr. Chas. L. Ianne, San Jose, Cal.

Dr. A. D. Long, El Paso, Texas.

Dr. Elmer Highberger, Oil City, Pa.

Dr. Raymond H. Runde, Mt. Vernon, Missouri.

Dr. Miguel Canizares, Manila, P. I.

Dr. Donato G. Alarcon, Mexico City.

Dr. John H. Washburn, Queensland, Australia.

#### NEW FELLOWS OF THE COLLEGE

The following physicians have been admitted as Fellows of the College during the month of November:

Dr. Edward Arnold, Canton, Ohio.

Dr. Moreton Homer Axline, Seattle, Washington.

Dr. Garry G. Bassett, Cleveland, Ohio.

Dr. William Arthur Bing, Amsterdam, New York.

Dr. Hans. L. W. Blume, New York, N. Y.

Dr. Isadore David Bobrowitz, Otisville, New York.

Dr. Wm. S. Conklin, Shreveport, Louisiana.

Dr. Herbert Harry Christianson, Wausau, Wisconsin.

Dr. R. R. Hendrickson, Wabasha, Minnesota.

Dr. Prescott Tillinghast Hill, Providence, R. I.

Dr. William Herbert Ordway, Mt. McGregor, New York.

Dr. Wm. G. Paradis, Crookston, Minnesota.

Dr. John J. Randall, Wyantskill, New York.

Dr. Alford J. Rosch, Chenango Bridge, N. Y.

Dr. Jesse Alton Stocker, Mt. Vernon, Missouri.

Dr. Donald Joseph Tillou, Elmira, New York.

Dr. David Townsend, Bristol, Tennessee.

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fortable. General care of patient is condu-  
cive to mental and physical well being.

SISTER MARY EDWARD, Superintendent

E. W. HAYES, M.D., Medical Director

## DR. MAHER ACCEPTS APPOINTMENT

Joseph Maher, M.D., Assistant Medical Director, Koch Hospital, St. Louis, Missouri, and a Fellow of the American College of Chest Physicians has resigned his position at Koch Hospital to accept the position of Medical Director and Superintendent of the Madison County Tuberculosis Sanatorium, Edwardsville, Illinois.

ELECTED PRESIDENT OF ECUADOR  
MEDICAL SOCIETY

Dr. Juan Tanca Marengo, Guayaquil, Ecuador, Governor of the American College of Chest Physicians for the Central American countries has been elected President of the Medical Society of Ecuador and is Director of the Medical-Surgical Society of Guayaquil.

## DR. NEWCOMB HONORED

Dr. Marcus W. Newcomb, Browns Mills, New Jersey, Governor of the American College of Chest Physicians for New Jersey; was honored at a testimonial dinner in recognition of his twentieth anniversary as superintendent of the Fairview Sanatorium, New Lisbon, New Jersey. Dr. William J. Carrington, Atlantic City, was the toastmaster and Dr. Edward John G. Beardsley, Philadelphia, delivered the principal address. More than 400 guests attended the dinner.

## DR. ANDERSON DELIVERS PAPER

Dr. Arnold S. Anderson, St. Petersburg, Florida, a Fellow of the American College of Chest Physicians; delivered a paper before the Pinellas County Medical Society, St. Petersburg, on October 20th. The title of his paper was "Pulmonary Tuberculosis".

## OBITUARY

Dr. James E. Murphy

On October 31, 1939, Dr. James Edward Murphy, Hartford, Connecticut, in his 62nd year, died of staphylococcus septicaemia. He was born in Philadelphia, Pennsylvania, April 26, 1878, and received his degree in medicine in 1907 from Medico-Chirurgical College, now incorporated in the University of Pennsylvania. After his internship, pulmonary tuberculosis necessitated a period of "cure" following which he was Resident Physician for nearly twenty-six years at Wildwood Sanatorium, the tuberculosis department of the Hartford Hospital, and a consultant specialist in thoracic medicine at several Hartford hospitals. Dr. Murphy was a bachelor. He leaves many relatives in his native city, where interment occurred. Aside from his medical attainments, he will be long remembered for his good fellowship, rare good humor, and generosity. Doctor Murphy was a Fellow of the American College of Chest Physicians.

William M. Stockwell, M.D.

*Governor of the College for Connecticut*

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